THE AIR LINE PILOT

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PROGRAM OF EDUCATION FOR PILOTS

President Behncke Points Out Advantages of Study

PROBLEMS CONSIDERED

Scientific and Practical Experience Can Be Combined

By DAVID L. BEHNCKE

Considerable comment has been brought to the attention of the Central Executive Council regarding what policy shall be adopted in our publication of the AIR LINE PILOT. What is meant by this is the establishment of the real purpose of our paper. Should we use it to print scathing remarks about our enemies; should it be merely a mutual admiration sheet; or possibly a semi-social publication?

I have given this matter much thought, and sincerely believe we should carry on with our paper for a three-fold purpose First, we should make it a medium of education for air line piloting. Second, we should tell what we have to tell about the work of the organization in a straight-forward yet courteous style of writing. Third, we should devote a definite space each month to news correspondents which each council shall appoint, if not already appointed, for the purpose of telling the news of his pilots; each month the news correspondents shall give constructive criticisms of the most recent issue and from these criticisms we will build the policy of the publication.

Educational Purposes

I believe that we should use the AIR LINE PILOT almost entirely for educational purposes. This means the publication of any material which can possibly be secured and serve to educate the air line pilot to more efficiently and safely perform his work. All such material will be edited and presented for the pilot's education and the betterment of his profession.

Specialized education is our best protection if we only realized it. Therefore, let us not "crab" over the blind flying instructions we are taking at the present time nor the preparatory work for attaining the new S. A. T. R. and the mental tests. All of this is strictly for our benefit and by all means we should enter into the spirit and do our best.

Certain companies are requiring their pilots to study meteorology for the purpose of making their pilots good judges of weather and becoming "weather conscious". Later possibly pilots will be required to have a thorough knowledge of regulations of the companies which employ them.

Specialization

All of this is very excellent and there is no question but what specialized education will bring air line pilots into a true professional status. It is the general belief that the efforts of the operators and the Department of Commerce towards educating air line pilots will work out to the best advantage of all concerned. The operators will be able to show better operation performance. The Department of Commerce will find it much easier to regulate an educated group of pilots than to regulate a distinct group of individualists.

The pilot benefits from all of this and will be much more secure,

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"Great Loss" Felt By T. & W. A. Boys On West Coast

Correspondent Reviews Public's Needs

By LaMAR NELSON
(Special Correspondent)

The pilots on the Pacific Division of TWA mourn the loss of one super-efficient and compass-substituting co-pilot. Orme Gove has been transferred, at his request, to New York, where he is now flying Newark to Columbus. His motive in removing his able person was indeed Christian, to put his sister through Columbia, where she will study for her master's degree. Meantime Orme will be serving special "napkins" to male passengers with their lunches, to the delight of all concerned . . . and to the consternation and perplexity of the unsophisticated Gove.

* * *

Harlan Hull, the ex-marine who believes that a telephone line is more reliable than a compass or bank and turn indicator in crossing the continental divide in thick weather, and Royal Leonard, newly elected Chairman of Council 4, both like variety, so they swap runs. Harlan takes the tri-motor day run for one month, while Royal soups the Northrups, and vice versa, — or contrariwise, as 'twere.

* * *

Dutch Halloway has invented an airplane. He won't tell us anything about it, but you may be sure that it will have among its merits something better than the "Thomas System" for covering bald heads, and some special gadgets for "Elimination". That is to say, there will be some "Bird Seed", or Psylla, or at least three feet of Public tubing, among the "Refinements".

* * *

The new Council for the TWA pilots, Pacific Division, consists of Royal Leonard, Chairman; Harlan Hull and Lawrence J. Chiappino. Let's give them our 100 per cent support, and make of this Division a non-griping, non-failing, up-to-ALPA standard gang.

AMERICAN OPERATED AIR LINES CARRY 248,954 PASSENGERS DURING THE FIRST SIX MONTHS OF 1932

Aircraft of American-operated scheduled air lines carried 248,954 passengers and flew 24,668,414 miles during the first six months of 1932, it was announced by Col. Clarence M. Young, Assistant Secretary of Commerce for Aeronautics. These totals represent increases over the first six months of 1931 of about 55,000, with respect to passengers carried, and more than 4,000,000 in number of miles flown. This survey also shows that of the 60,850 trips started during this period, 57,630, or approximately 95 per cent, were completed.

Mail carried in the period January-June, 1932, was 4,342,507 pounds as compared with 4,589,707 in the corresponding part of 1931. Air express was 712,638 pounds in the first half of 1932, a substantial increase over the 417,309 pounds carried in the first half of 1931.

The survey also revealed that 580 aircraft were in use on American-operated air lines and that these aircraft consumed 11,178,807 gallons of gasoline and 317,656 gallons of oil during the first half of the year. It was shown, too, that the airlines furnished employment for 5,461 persons, classified as follows: 558 pilots, 167 co-pilots, 1,929 mechanics, 1,522 field personnel, and 1,285 office personnel.

The statistical study just finished is the regular semi-annual report on operations of scheduled air lines, including those operating within the United States, and those extensions to foreign countries which are operated by American companies.

The peak month of the half year period, for miles flown and passengers carried, was June. In that month the air lines flew 4,421,978 miles and carried 51,871 passengers. The heaviest month for air express business was March, when the total poundage was 140,505. March, also, was the leading period for air mail, 765,228 pounds having been transported in that month.

A summary presenting comparisons with the first six months of 1931 follows:

DOMESTIC

	January-June 1932	January-June 1931
Miles flown	22,204,295	18,129,168
Passengers flown	217,588	169,816
Express (pounds)	441,192	247,422
Mail (pounds)	4,081,270	4,332,714
Mail payments	$ 9,198,060.32	$ 9,160,260.88
Passenger-miles	54,534,746	40,855,654
FOREIGN		
Miles flown	2,464,119	2,175,262
Passengers flown	31,366	23,835
Express (pounds)	271,446	169,887
Mail (pounds)	261,237	256,993
Mail payments	$ 3,445,643 95	$ 3,464,772.00
Passenger-miles	8,994,792	6,646,247
DOMESTIC AND FOREIGN		
Miles flown	24,668,414	20,304,430
Passengers flown	248,954	193,651
Express (pounds)	712,638	417,309
Mail (pounds)	4,342,507	4,589,707
Mail Payments	$12,643,704.27	$12,625,032 88
Passenger-miles	63,529,538	47,501,901

CY CALDWELL MAKES AIR TALKS ON AIR

Folks down East are having their radio Sunday evenings enlightened on aeronautics and pilots in general.

Good old Cy Caldwell, veteran of the written word, has come forth as a radio luminary.

Cy talks from WAAT Jersey City Sunday evenings at 10:15 New York Daylight Saving Time.

We all know that Cy's meat is aeronautics and national defense.

There is only one means of public intelligence left for Cy to break into, and that is a personal tour on the R. K. O. Circuit or something!

First Post Offices Are Said to Date From 550 B. C.

System for General Public Was Not Set Up Until 1516, However, States Post Office Department

The world's first system of post offices and post roads was established about 550 B. C. by Cyrus the Elder, King of Persia, but the first post office for the general public was not established until 1516, according to an historical summary by the Post Office Department, made public Aug. 30.

There are hazy references to other early postal services, however, in the Bible and in records left by the Aztec Indians, it was revealed.

The following information was made available:

Records of both ancient and modern civilization disclose the existence of some sort of a postal service employed as a means of communication between those who inhabited the earth during these periods of development.

History records that the terms post office and post roads have been in use for upwards of 2,000 years. This system of communication was evidently worked out by Cyrus the Elder shortly after his conquest of the Persian Empire in the year 550 B. C. This ruler, in order to keep in touch with the affairs of his vast domain, required his Governors and Chief Commanders to write to him frequently about the developments in their several districts. In order to make those communications safe and to carry them expeditiously, he built post roads throughout the Empire and post houses at distances along these roads conveniently for a swift horse to travel.

It is related in history that every ruler, both of Persian and Roman empires, from the time of Cyrus down to the Middle Ages, concocted some scheme for postal communications. However, the service, both in ancient and mediaeval periods, was for the benefit of the government solely and the general public did not share in it at all.

In the Bible there are several chapters in the Book of Esther containing an historical record of the sending and delivering of mail by post. In America, use of a system of parcels post by the Aztec Indians is recorded in Prescott's "Conquest of America". The Aztecs employed this means to distribute the fish they caught throughout the various Indian villages.

Started in 1639 in America

So far as known, the first post office which was established for the general public was in 1516, between Vienna and Berlin. In 1523 England established a postal system, but it was only used for communications between members of the royal family.

In America the postal system dates from 1639, when the General Court of Massachusetts, by an ordinance legalized such a means of communication and directed that all letters brought from overseas should be left at the home of Richard Fairbanks, in Boston, and by him transmitted to the proper part of the country to which they were directed. He was allowed a penny compensation for the transmission of each letter and was accountable to the authorities for any dereliction of duty,

The Virginia Colony soon afterwards established a postal system and under an ordinance required each planter receiving a communication to pass it along to his nearest neighbor. The penalty imposed for his failure to do so was the forfeiture of a hogshead of tobacco.

METHOD OF ORIENTATION EXPLAINED

T. & W. A. Member Gives Another Interesting Formula

K. C. BEACON USED AS EXAMPLE

"Mere Guessing Causes Real Trouble"

By H. B. SNEAD

Actual practice has shown that those who devote the greatest amount of time on the ground to a study of blind flying theory require the least number of hours under the hood. This is especially true of radio beacon work.

We are using a system of orientation which at first glance resembles a solution of the Einstein Theory. A little application and serious thought by the pilot on the ground, however, convinces him that it is simplicity itself; but we must apply ourselves in acquiring an accurate knowledge of its operation as well as all problems connected with the work and I feel that your advice in the article mentioned above will aid immeasurably in bringing this about.

I am enclosing a blue print of the orientation system referred to above, together with instructions which accompany it. I am told that this particular method had its inception among the N. A. T. pilots during the recent S. A. T. R. tests. We have elaborated on the idea to the extent of smoothness and precision and devised a simple rule of determining the orientation course on any beacon. For instance: On this particular beacon (Kansas City) we proceed as follows: Bisect the angle formed by the Northwest and Northeast beams (always start in the "N" quadrant containing true North or the adjacent West quadrant if a beam runs true North). The course of the bisecting line in this case would be 5°. This is always the course flown in the "A" segments and for the "N" quadrants a course at right angles to the above or 275°. These courses are so near North and West that we have used the latter for the reason that they are more easily remembered. Now, we might have chosen the fly South in an "A" and East in an "N", the problems work themselves out just as easily in either case. We selected North and West, however, because the Southeast beam runs directly over Kansas City and as some of our problems require low flying the element of danger is too great over the business section of the city. You will note that all problems lead away from Kansas City.

I think we should spare no effort in convincing our boys that they should have some particular method of orientation in mind for every beacon on their respective runs. And **stay with that method in case of trouble.** Just as soon as a pilot starts **guessing** where he is, his trouble begins. True, we usually know "about" where we are when approaching a station. We may not have occasion to use a system of orientation in one case out of a hundred. But that hundredth time —when we must truthfully admit we are lost is where a "system" can be used to great advantage. This business of coming down through a rift in the clouds at night under a low ceiling and hedge hopping here and there looking for the field when a perfectly good beacon is in use is the rankest kind

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EDUCATION

There is no profession or activity in life which is not enhanced by the educational value brought to it from the minds of others.

Nor is any man capable of acknowledging that he knows everything about his or any other profession.

Where we are engaged in a specialized line of endeavor; we have a specialized line of education. The resources for the gaining of this education are extremely limited. Our profession is comparatively new, advancement of air commerce is rapid and lately has come to involve practically all of the sciences. Navigation, magnetic science, chemistry, mechanical engineering, meteorology, electrical genius and psychology are but a few of the potent elements which are brought to us in the present equipment we fly.

And to us have come the mental elements of stability, recognition, responsibility and consideration interspersed with the stringent realization of experiences.

With all this, it is our experiences which must guide and adapt the assistance of science. To repeat an oft-used phrase: "regardless of how precisional perfect, mechanically safe and scientifically adapted is the aeroplane, it is the most dangerous piece of equipment conceived by man when not in the hands of a capable pilot."

But let us enhance our experiences with and from these tangential attributes of science by studying their construction and theoretical reasoning with our practical adaption.

Regulations formulated by those whose specific research and education place them as authorities, are not made for the sole purpose of keeping such authorities busy. They are instituted as an example of assistance. Through this association, representing the collective opinion of AIR LINE PILOTS, the scientific and regulatory bodies interested in air commerce, are given a common ground of acknowledged acceptance or rejection of some projected theory.

And it is through the medium of education that we shall fortify our experience with logical ability to say "what we mean" and "mean what we say".

—o—

HEADQUARTERS BULLETIN

A recapitulated report of the unfinished council business and back dues leads Headquarters to urgently request all council chairmen to bring their council business up to date for the Convention.

Back dues is an important factor and in the mailing for the September Council Meeting, the Financial Report will show the exact status of members under each council's jurisdiction.

Treasurer Huber makes the following announcement: "In order for the Treasurer's Department to make a favorable report to the first annual Convention, as well as establish the voting power of each delegate, I request the Council Chairmen and Committees on Dues make a diligent effort between now and Convention Call to bring delinquent members under their jurisdiction into good standing."

Headquarters wishes to call to the attention of the membership that the Financial Report for the first fiscal year is now in the hands of all chairmen.

The information contained in these reports is available to the members through their council chairmen.

Air Mail Advance Is Reviewed In Postal Records

Years 1926 and 1927 Shown To Have Been Significant For Development of Size And Speed of Planes

By THE U. S. DAILY

The years 1926 and 1927 were significant in the development of the air mail, for during this period came five changes which advanced air mail beyond what it had ever been, according to records of the Post Office Department, made public August 25.

The following additional information was made available:

In view of the steady increase in mail loads, augmented by the establishment of several contract feeder routes in the early part of the year 1926, it became apparent to the Department that a plane carrying a much larger load than the DeHaviland was necessary. Competition among various aircraft manufacturers was invited and as a final result 51 Douglas mail planes were purchased, deliveries starting in the month of May, 1926. These new planes were capable of carrying more than twice the load carried by the DeHaviland, and also had considerable more speed.

As a matter of fact, trips between certain points were made at the rate of 150 to 160 or more miles per hour, but these were quite infrequent, however, and only when a stiff tail wind was in evidence. The record mail trip between Chicago and New York City was made on Dec. 16, 1926, at the rate of 167.5 miles per hour. The fastest mail trip on record was made on Jan. 30, 1927, between Chicago and Cleveland, at the rate of 175.1 miles per hour.

The greater cruising radius and speed of the Douglas planes permitted the discontinuance, except possibly in adverse weather conditions, of stops in both directions at Bellefonte, Bryan and Rawlins, and on eastbound trips at Iowa City, North Platte and Rock Springs An important change in the eastbound transcontinental schedule was also made possible, allowing 1 hour and 15 minutes later departure from the New York termini.

The new planes were put into use between Salt Lake City and New York City, where mail loads were heaviest, the DeHavilands being used from Salt Lake City west. The building of DeHaviland planes at the repair depot was discontinued on July 1, 1926, work of that nature being confined from then on to the repairing of old DeHavilands and damaged Douglas planes. The surplus DeHaviland planes released were advertised and sold.

An important step bearing on the development of air mail traffic was taken by the Department on Feb. 1, 1927, when a new postage rate of 10 cents per half ounce was put into effect, thereby entirely doing away with the complicated zoning system previously in use on transcontinental and contract routes. The new flat rate entailed transportation between any points in the country, without regard to distance, and was a valuable means of increasing patronage.

Awarded Collier Trophy

The Air Mail Service was awarded the Collier trophy for the most important contributions to the development of aeronautics in the year 1922, on its outstanding record of safety established, and again in the year 1923, for demonstrating the practicability of night flying. The Harmon trophy of the United States, offered for the first time in the year 1926, was awarded by the International League of Aviators to an air mail pilot—because of his remarkable record of having flown during that year over 718 hours, without accident, in all kinds of weather, both Winter and Summer, on regularly assigned trips, 47 per cent of the time being flown at night. It may be stated that in the award of the Harmon trophy the wonderful day-in and day-out flying record of the air mail pilot was considered more meritorious in the cause of advancing aviation than the flight made during that year by Commander Byrd over the North Pole.

It had never been the intention of the Post Office Department, however, to operate the air mail service longer than was necessary to clearly demonstrate the practicability of commercial aviation to the general public, and thereby induce private enterprise to enter the field and eventually take over the operation of service. Due to the large measure of success attained in the efficient operation and development of the transcontinental route, the desired interest was rapidly increasing and in the year 1926 several contract air mail routes were put into operation, and contracts on several more routes awarded.

Interest in commercial aviation, and contract air mail service in particular, was further enlivened when in the Spring of 1926 Congress passed a bill, known as the "Air Commerce Act of 1926," which, briefly stated, imposed upon the Secretary of Commerce the duty of fostering the development of commercial aviation in the United States. It authorized the Secretary of Commerce, among other things to designate and establish airways, in so far as funds were made available by Congress from year to year, and to establish, operate and maintain along such airways all necessary lights and emergency landing fields.

Provision for Airways

It also provided that at such time as the Postmaster General and Secretary of Commerce by joint order should direct, the airway under the jurisdiction and control of the Postmaster General, together with all emergency landing fields and other air facilities (except airports or terminal landing fields) used in connection therewith, would be transferred to the jurisdiction and control of the Secretary of Commerce, the established airports or terminal landing fields to be transferred to the jurisdiction and control of the municipalities concerned under arrangements subject to approval by the President.

Taking all these happenings into consideration, the Postmaster General concluded that the time was fast approaching, or was actually at hand, when the transcontinental air mail route might be turned over to private contractors and operation successfully and profitably carried on by them.

In order to ascertain the response that would be made, advertisements were issued on Nov. 15, 1926, to expire on Jan. 15, 1927, for proposals for service on the transcontinental route by sections—(1) New York to Chicago, and (2) Chicago to San Francisco. A proposal at a satisfactory rate was received on the Chicago to San Francisco section from the Boeing Airplane Company & Edward Hubbard, of Seattle, Wash. (later incorporated as the Boeing Air Transport, Salt Lake City, Utah), and accepted.

Service began under their contract July 1, 1927, the Post Office Department relinquishing operation at midnight June 30. As no satisfactory bid was received for the service between New York and Chicago, that section of the route was readvertised under date of March 8 and the bid of the National Air Transport, Inc., Chicago, Ill., accepted thereunder. This company began service under their contract on Sept. 1, the Post Office Department continuing operating up until that time.

Airway Service Transferred

In addition to turning over to the contractor operation of service between Chicago and San Francisco on July 1, 1927, another important event in the history of the Government-operated air mail service took place on that date when, acting under legislation contained in the Air Commerce Act above referred to, the lighted airway and the radio service were transferred to the jurisdiction and control of the Department of Commerce.

The transfer of the radio service included 17 fully equipped stations, with an operating personnel of 44. Transfer of the lighted airway included an operating personnel of approximately 102, and the following fields and lights:

Emergency landing fields with caretakers in charge, 68; emergency landing fields automatically operated (no caretakers), 21; electric beacon lights in between emergency fields with caretakers in charge, 21; electric beacon lights in between emergency fields automatically operated, 79; A. G. A. gas routing beacons (automatic), 405.

A number of new Douglas planes were sold to air mail contractors, and the balance, together with the few remaining serviceable DeHavilands, were transferred to other Government departments in need of such equipment. Considerable of the shop material and equipment could be advantageously used in the large post office garages and transfer was accordingly made. The remaining serviceable material, equipment, etc., was listed to the Chief Coordinator for clearance and that desired by other Government departments was accordingly transferred.

The material and equipment not taken by other branches of the Government was listed for sale and sold in the usual manner to the highest bidder. By Dec. 31, 1927, the Department's interests were completely closed out at all fields except Chicago, where only a small quantity of the material and equipment located in the repair depot and warehouse remained to be disposed of.

New Orleans' Beauties

Down in New Orleans there is a family which boasts of four big B's—Burns' Blue Blooded Bostons—and here we see evidently two of the four B's. Mrs. Jimmy Burns and her famous Grand International Champion Boston Terrier "Globe Glowing Ember".

Back during the Century controversy, Mrs. Burns' soft southern drawl was one of the most effective voices raised in protest to Congress.

She is the wife of Chairman "Jimmy" Burns, of Council 8, American Airways Gulf Coast Division.

"To fly West, my friend, is a flight we all must take for a final check."

In Constant Memoriam

Andert, Paul A.—BAT West

• • •

Bigelow, Ed.—Varney

• • •

Cox, F.—Ludington

• • •

George, Hal—TWA

• • •

Hill, George W.—T. A. C.

• • •

Kelsey, Harold J.—AA South

• • •

Lucas, V.—Ludington

• • •

Malick, Forrest E.—NAT East

• • •

Potter, Norman W.—BAT West

• • •

Rousch, Chas. W.—Northwest

• • •

Rust, F. H.—TAC

• • •

Sandblom, J. V.—C-P

• • •

Sharpnack, J. W.—BAT West

Air Lines Declared Indispensable To Future Transport Systems

Avoidances of Legislative Hindrances Urged by Assistant Secretary Young

CLEVELAND, OHIO, August 26, 1932 (ANS).—Unwise restrictive legislation by State and Federal governments were expressed by Colonel Clarence M. Young, Assistant Secretary of Commerce for Aeronautics, as being the only possible hindrance to the advancement of air commerce.

Speaking in connection with the opening of the National Air Races here, he pointed out the need of avoiding restrictions by governments which would hinder transportation companies in making substantial investments and other steps for an orderly growth of the industry. He designated the need for establishing some permanency in arranging for air mail service.

References were made to the new devices which have been developed for the safety and advancement of air commerce.

Colonel Young's address follows in full text:

It is indeed a pleasure to be here in Cleveland on the eve of the opening of the National Air Races—the premier sporting event of the year in aeronautics. Since it was first held 10 years ago, I have been in touch with this annual event and have watched it grow from a brief but interesting series of contests built around the Pulitzer Trophy Race to an elaborate program such as those staged during the last few years.

Cleveland is to be congratulated on the courage and ability which have made possible the outstanding event of last year, and the thorough planning and preparation for the one this year—and to accomplish it despite exceedingly difficult economic conditions.

Speed and efficiency of aircraft entered in the contests have been increased to a marked degree since the races were first held. A glance over the records of all the races since the first Pulitzer Trophy Race at Mitchel Field in 1920—the forerunner of the present National Air Races — reveals an increase in speed from 156 miles per hour to the 236 miles per hour speed of the Thompson Trophy Race in Cleveland last year. For the three years from 1923 to 1925 the military aircraft entered in the Pulitzer Trophy Race attained speeds of well over 200 miles per hour, doubtless contributing to the development of present high speed military craft. A similar influence should be exerted upon commercial designing by the fast civil craft now being entered in the races.

Brief History of Industry

Of special significance is the advance made in the method of managing the races, and the increased interest that is accorded them. The early races partook somewhat of the "barnstorming" era during which they were held. Those of the present day are staged in a highly scientific fashion and constitute not only the major sports event of flying, but furnish an important attraction and an educational program for the public in general as well. But these rapid developments are not peculiar to the National Air Races. Rather, they seem typical of the entire aeronautics industry.

The history of the aeronautics industry, as now constituted, is even more brief than that of the air races. Although heavier-than-air flight became an actuality in 1903, it was but six or seven years ago, approximately, that there was any real organized and comprehensive effort to develop civil aeronautics; but some five or six years ago that scheduled operations with transportation of mail were undertaken by private enterprise; and only a little more than two years since a similar effort was devoted to the scheduled transportation of passengers. In that period of time we have moved up from behind and assumed world leadership in civil and commercial aviation.

Also, in the last six-year period, or during the existence of the Aeronautics Branch of the Department of Commerce, an airway system has been constructed in the United States, the like of which exists in no other country or group of countries in the world. It is made up of all known aids to air navigation, such as beacon lights, intermediate landing fields, radio range beacons, radio communication stations, teletypewriter circuits, weather reporting service, etc., together with trained personnel to operate and maintain the equipment, and constitutes at the present time a 19,500-mile highway system of the air.

A nation-wide system of scheduled air lines has been built up, offering speedy and direct air mail, passenger and express service to all sections of the Nation. In each successive year air transport has broadened the scope of its activities, as may be seen from the following:

	1929	1930
Passengers	173,405	417,505
Mail (pounds) .	7,772,014	8,513,675
Express (pounds)	257,443	468,571
Miles flown	25,141,499	36,945,203
	1931	Estimate for 1932
Passengers	522,345	700,000
Mail(pounds) ..	9,643,211	10,000,000
Mail (pounds) .	9,643,211	10,000,000
Express (pounds)	1,151,348	2,000,000
Miles flown	47,385,987	60,000,000

In view of these several accomplishments in the various phases of the industry, it cannot be said that civil aviation in the United States has not made substantial progress in the comparatively short period of its existence. No other transport system in existence today can cite a similar initial achievement.

Changes Necessitated By Economic Conditions

It is true that in common with all industries, the aviation industry is in a period of depressing influences. Doubtless, in some respects, it has felt these influences more keenly than most any other. It is comparatively new and was not so deeply rooted, nor did it have the background of organized experience. Also, at the beginning of the period of economic unrest it had just been promoted beyond any reasonable premise then existing.

It had a great distance from which to recede, and the recession was both painful and exacting. Times changed suddenly and the industry found itself confronted with the necessity of revising its plans and ideas along economic lines more nearly suited to the changed conditions, and this it has seriously undertaken in a constructive manner and with marked success.

Research work is constantly under way under the auspices of the Aeronautics Branch. Among the many projects included in this program is the development of radio equipment to be used for fog landings when fog or haze obscures the surface of an airport. A radio transmitting device gives the pilot directions for bringing his plane down onto the landing area.

It directs him to the runway and keeps him on this course, it leads him downward in the long glide that is proper for descent to the ground, and it tells him when he has passed over the edge of the field and should level off for his landing. Many tests of the equipment and technique have been made, and plans now are being formulated for an installation at an airport where the radio system for fog landing can be tried out under practical operating conditions.

Radio Transmission Of Direction Signals

Another project is the radio transmitter for simultaneous transmission of visual radio range signals and radio telephone broadcasts. The principle involved is that of modulated frequencies. The broadcasting station would transmit both sets of signals on one given frequency but the range signals and radio telephone signals would involve different modulations. The receiving set on the aircraft would select the modulations, directing the range signals into the visual beacon indicating apparatus, and the modulations carrying voice broadcasts into the pilot's headphones. Experimental work on this equipment is still in progress. It will prove to be a most valuable aid to air navigation.

A method of transmitting weather maps over the teletypewriter cricuits has been worked out, and if it can be put into service, will make available to airmen maps representing data less than an hour old.

An experimental circuit for map transmission was maintained for several weeks with excellent results. Master maps were prepared at Cleveland for the eastern part of the country and at Kansas City for the central part. These maps were put onto the circuits at the two points mentioned and at receiving stations the information was automatically typed onto blank maps. In actual service there would be a third map for the western part of the United States, and all would be transmitted every three hours.

Future operations of airplanes will no doubt depend less and less upon the human element. Developments such as those to which reference has just been made, and the use of automatic pilots and improved flight instruments will play an important part in further promoting safety and reliability.

Regulatory work of the Aeronautics Branch includes supervision, from a safety point of view, of scheduled air transport lines carrying passengers interstate. The regulations in this regard require that aircraft shall be properly adaptable to the nature of the service involved; that airmen shall be fully competent, that airways and air navigation facilities on routes operated shall be approved by the Department; that there be a satisfactory, adequate and properly qualified ground organization and that maintenance of equipment be conducted in accordance with accepted standards and practices.

Under the provisions of a recent amendment to the regulations, pilots flying in operations of this kind will be required to hold scheduled air transport ratings. To qualify for the rating a pilot shall have had at least 1,200 hours of certified solo flying time, including 500 hours of cross-country flying, and shall have had 75 or more hours of night flying.

He is required to pass a written examination on the use of radio and other aids to air navigation, including tests in meteorology with respect to weather analysis and forecasting. Also, his ability to fly by instrument is tested in a flight during which he operates the craft while seated under a hooded cockpit with a Department of Commerce inspector in the craft as check pilot.

Anyone using the air lines can take it for granted that the man at the controls is not a fair weather pilot—that he is familiar with the course and has the necessary knowledge of radio, flight instruments and use of aids to air navigation.

Reduced Funds Require Some Curtailments

Experimentation and planning for the future also have occupied the minds of manufacturers of aircraft. Aircraft manufacturers, like all others, have felt the adverse effects of the last few years, but they are going ahead with their work, designing and developing craft to meet the demands of an intelligent and discriminating market.

However, when an economic condition exists which makes it exceedingly difficult to market automobiles, refrigerators, radios and other commodities of long-recognized utility, then certainly one can not expect to find an easy or ready market for aircraft Therefore, there can be no peculiar reflection of any kind upon the aircraft manufacturers' industry or its effort to distribute its wares.

The agencies of the Federal Government having to do with civil aeronautics will be working during the coming year with substantially reduced appropriations. Reduction of Government expenditure at this time obviously is necessary, and every effort is being made to effect economies in carrying out the work of promoting and regulating aeronautics. Some curtailments will have to be made, but these will be worked out in such a way as not to be reflected adversely in the safety of operations of air transportation.

If it is possible to avoid restrictive legislation of an unwise kind, both State and Federal, and if some permanency in the arrangement for air mail service can be effected, in order that transport companies may continue to make substantial investments and take such other steps as are necessary to their orderly growth, there can be no doubt as to the indispensable part air transport will have in the general transportation scheme of the Nation.

USE OF SILK AND RAYON BY ARMY AIR CORPS

Specifications for Construction of Parachutes Based on Strength, Weight, Tear-resistance and Other Qualities

Prepared under Direction of Col. Alvin C. Voris, Signal Corps, U. S. A., Director of Planning Branch, Department of War

THE Army has many uses for silk. Some of these are similar to those occurring in the everyday life of the average citizen, and some are peculiar to the military forces. The principal uses by the different arms and services of the Army are described in detail below.

In adopting silk for these purposes the Army recognized the outstanding qualities of this material for certain of its requirements. These uses will probably be continued as long as supplies of silk are available.

But, recognizing the necessity of being prepared for a situation which would cut off the foreign sources of supply on which this country is entirely dependent, the search for a substitute produced domestically has been followed energetically. Today a usable substitute has been found for practically every use.

Rayon would be used for few purposes in the military services as long as ample supplies of silk are available. The rayon production is of interest to the military services since, while it may have but few military uses, it can replace silk for non-military use and thus release a corresponding amount of the natural product.

* * *

The Air Corps uses annually about 100,000 yards of silk cloth in the construction and maintenance of parachutes. There are also proportionate amounts of silk cordage, webbing, and sewing threads used for the same purpose, and to a more limited extent there is some slight use of silk cloth as lining material for flying garments. The amounts used and the particularly vital service demanded of these articles serve to emphasize the importance of silk to the Air Corps.

Silk was selected because of its excellent physical properties, and in spite of the fact that there was little or no supply of the raw material grown within the United States. It was not until comparatively recently that suitable substitutes were developed which compare favorably in performance with the standard silk cloth.

American activities in connection with the development of parachutes were begun about 1918 by a group of military and civilian engineers at Dayton, Ohio. Comprehensive tests were accomplished on all known types of parachutes and of the materials used in their construction. The most satisfactory of all these types of parachutes invariably used silk for the main canopy.

Specifications were drawn up around these successful materials, and the original requirements were so complete that American manufacturers could not furnish the material owing to the limited selection of yarn sizes available in this country. For a period of a few years this condition resulted in the use of silk cloth woven in Japan.

* * *

However, as technical information increased, and the requirements of parachute cloth were more closely defined, it was possible to vary specification requirements sufficiently to obtain American woven cloth in practically unlimited quantities. In this connection too much can not be said for the skill, the cooperation, and the efforts of the American manufacturers to obtain a domestic woven parachute cloth equal in performance to the best of the imported cloths. Since that time there has been no procurement of parachute silk other than domestic woven material.

About 1928 the procurement of parachute silk was made on the basis of performance of the material rather than by specifying the details of construction. Up to this time the specifications indicated the actual size of the yarns used in the design of the cloth, but this presented some real disadvantages.

The stock of raw silks on hand within the United States at any given time covers a wide range of quality and size, and when a specification indicates definitely the size of the yarns for the construction of a cloth, it necessarily follows that only a small portion of the raw silk stocks on hand are suitable or even usable. To correct this condition the specification was revised to the "performance" type as opposed to the construction type.

* * *

The performance requirements for parachute silk included strength, weight, resistance to tearing, and the rate of airflow through the cloth. The only new consideration included in these requirements was that for airflow, and these limits were selected on the basis of comprehensive tests by the Air Corps to determine the part played by the porosity of the cloth in the functioning of the parachute.

Air Corps procurements of parachute silk have been satisfactorily made with this type of specification since 1928, and it is felt that a much larger portion of the raw silk stocks on hand are available for the construction of parachute cloth as a result.

CENTURY STRIKE BREAKERS:

The following were in flying status as of March 31, on Century Air Lines:

Merle F. Buck
T. R. Potts
H. S. Clark
M. A. Johnson
E. B. Smith
Joe James
E. M. Day, Jr.
C. H. Reeves
F. F. Sheltz
C. W. Childress
M. P. Knighton
Sam G. Grebe
Ennis L. Stewart
Earl A. Fields
Geo. E. Halsey
Ken Oliver
H. W. Lucas
Russel Mossman
Sidney Cleveland
Theo Graff
Ira Smalling
Wiley Moore
R. T. Roland
N. L. Sifers

"Know Our Jobs" Best Method to Bring Safety

Competitive Flying Study Made by Ludington Pilot

By T. BENSON HOY

In the April 20th issue of the AIR LINE PILOT the article "Competitive Flying" outlines a condition which it should be our firm purpose as an Association and as individuals to eliminate.

The article asserts that—"The cut-throat flying so prevalent on the airlines today has tended to distort the pilot's judgment. . . . Each is afraid to quit because the other might go on. . . . Faced with the fear of losing his job, even the pilot who knows better will take a chance and fly on." Further along it describes this foolish rivalry as a "deplorable situation" and states that—"The present reckless competition is setting a dangerous standard." The conclusion follows: "Therefore, it can be seen that the present system of leaving the matter of weather up to the judgment of the individual pilot, though theoretically correct, has its weakness in actual practice; because competitive flying, the fear of being flown over, tends to distort the pilot's judgment."

All of us are familiar with the many persuasions and influences surrounding our work which tend to distort our judgment At different times, methods of controlling the pilot have been tried and discarded or soon ignored.

Arthur Brisbane, the columnist, reached a whimsical climax when he advocated the decision of when to fly "should be left to some solemn person, not a pilot". One company almost equalled this when they issued instructions setting the exact miles per hour at which the pilots should land and take off.

But no matter what the operating policies of any particular line may be, in the final analysis, the results of our decisions are on our own heads. So, the problem of how and when to fly would seem to be clearly and naturally one for the pilot to solve.

Spasmodic efforts to effect some control have left a vexing aftermath: Too many persons feel entitled to make critical inquiry into our decisions. (This is not meant to defend a pilot looping or barrel-rolling a load of passengers.) We will always be subjected to running a gauntlet of critics until we make the fact clearly understood that we know our jobs and make the industry accept it as such.

This claim is nothing but boyish bluster if competition is allowed to be an influencing factor in our flying. We must realize that with our experience we should know our jobs. If we aren't able to apply intelligently and independently the knowledge we have gained in the last three or four thousand hours to any situation, then we don't know our jobs and have no right to claim recognition as an Association and least of all as professional men. There is no need of crashing into a mountain in the pursuit of knowledge and we should certainly know that a plane won't carry ice even in a spirit of competition.

It is in our power to determine what position we will occupy in the industry. Should the claim that we know our jobs turn out to be merely an assumption and hence subject to endless checks and restrictions, then the pilot individually or collectively will not survive in any important degree. Each pilot has the collective destiny of the group in his hands. And no pilot who flies on with moral fear as fuel for physical courage is anything else but a mistake and a menace to the profession.

Nor has the dogged determination of the old college spirit any place at the controls. One cancelled flight, or six, or a thousand will benefit us immeasurably more than if we all took the air, muttering curses through lips set in a grim line of determination and with eyes haunted by fear of what the other fellow was doing.

Instead of admitting or even suggesting that we aren't qualified to pass judgment on weather we should jealously defend our right and ability to do so. Take that prerogative away from us and we are left with little else than the mechanical operation of a plane for our job.

When confronted with a situation requiring a decision we should remember that blind, blundering courage is one of the cheapest commodities and is nothing to be proud of in our field of activity. Our traffic departments are selling transportation tickets and not lottery tickets in a sanguinary steeplechase.

Finally, in the intensified operations of the Ludington Line everyone of us has been flown over more than once and it ain't so hard to take. If it is an experience you are risking your neck to avoid, try it sometime and get over the idea of its shame before it is too late.

MORE ABOUT PAPER'S USE

(Continued From Page 1)

because of his specialized education.

To this end, publication of the AIR LINE PILOT undoubtedly assumes an important place. For instance, this issue carries an interesting article by Pilot HAL SNEAD of T. & W. A. The diagram and example given us by Pilot SNEAD and his type of orientation covers the Kansas City beacon. However, like the brief presented by Headquarters to the membership, it is adaptable to any beacon after the magnetic polar angles have been placed according to the particular beacon.

There are doubtless hundreds of educational formulas and methods in use by the various members of this association, and just as doubtless is the fact that these various educational angles presented to brother pilots would more than fortify our status of knowledge. We, therefore, respectfully request that pilots having data, formulas and matters of aeronautical advancement, submit them to Headquarters for presentation to the membership through the columns of the AIR LINE PILOT.

CAUGHT FROM THE MAIL POUCH

DEPARTMENT OF COMMERCE
Office of the
Assistant Secretary for Aeronautics
WASHINGTON

August 29, 1932.

Mr. David L. Behncke,
President, Air Line Pilots Association
3145 West Sixty-third Street,
Chicago, Illinois.

My dear Dave:

This will acknowledge receipt of your letter of August 20, accompanied by copies of the bulletin on examination problems of Scheduled Air Transport Ratings which was recently compiled and distributed to your membership.

This bulletin contains information which should be of distinct help to your members in qualifying themselves for the Scheduled Air Transport Rating and I want to commend you and your organization on your thoughtfulness in making it available in this form. The instructions for the use of the radio beacon, which were attached, are particularly interesting and should be very helpful. The only criticism would be that they were condensed to a point which might make them confusing to the reader.

An article giving a rather detailed description of radio range flying is now being prepared. As soon as it is off the press, I shall notify you and you may carry notice of its publication in your paper. The Department will be glad to forward a copy to any pilot requesting it.

Let me again congratulate you on the thoughtfulness of your organization in making this material available to your members and to express appreciation of the spirit of co-operation with this Department which is shown thereby.

Kindest personal regards.

Sincerely yours,
CLARENCE M. YOUNG,
Assistant Secretary of Commerce.

MORE ABOUT ORIENTATION

(Continued from Page 1)

of foolishness and should be discouraged.

Our company is preparing a map showing all beacons on our line from coast to coast with the magnetic course of each beacon. In addition most of the pilots are preparing a separate sheet for each beacon on this run showing the method of orientation for that particular beacon.

The greatest trouble most of the pilots have is overcontrolling on the beams. They simply can't stand to hear an off-course signal. They **must** get back immediately on the beam and angle too much into it in so doing. The result is that they go across the beam and have the same correction to make again on the other side thus performing a series of criss-cross maneuvers which fail dismally in putting them squarely on the beam. Tri-motor men and those flying heavy equipment are the greatest offenders. These are strictly passenger pilots and naturally do not have the opportunity for practice that is possible for the night mail boys. Another thing—their roughness on the controls is attributable to their absence of recent time in light ships.

After the tendency to overcontrol has been eliminated, the problem of finding the silent zone over the beacon becomes less difficult. And, too, the importance of keeping the signal volume turned down to a minimum on approaching the beacon is quickly learned by repeated trips back and forth over the station. If the signal strength is kept down to a point where the signals are faintly audible the silent zone can be missed by a large margin on either side and the position of the beacon still determined by the rapidly built-up signal strength on approaching and passing the station.

The time necessary for acquiring a proficiency in this work, sufficient at least to pass the S. A. T. R. test with a good grade is approximately twelve hours and a half. This average is arrived at by taking the entire time of 25 pilots from the first hour under the hood, up to and including the time required for the test. About seven hours of this time is devoted entirely to beacon work.

This method lends itself very nicely to close-in work and is especially adapted to the Kansas City beam arrangement. The solution of a problem from any quadrant is positive and absolutely infallible. A clear working knowledge of the system before going into the air will cut down the time required to master its practical application. A close study of its operation is earnestly requested.

A good rule to remember is to fly North in an "A" quadrant and West in an "N". Regardless of where you **think** you are when the inspector tells you to tune in on the station, follow the above rule and work your problem out to its conclusion.

Unlike other systems in use, the "90 degree" method does not depend upon increased or decreased signal strength to determine the particular quadrant you might be flying in. In this case the primary idea is to fly in the direction of and with the sole idea of intersecting a beam. Upon reaching the beam a 90 degree turn **to the right** is made and the letter received immediately after determines the segment in which we are flying. For instance: Suppose we receive an "A" signal when the radio is tuned in. Remember the rule: "Fly North in an "A" quadrant" and sit tight on the North course until the **on course** signal of a beam is reached. Up to this point we don't know whether we have been flying in the East or West quadrant. But now, on reaching the **on course** signal of the beam we turn 90 degrees to the right. If we receive an "N" signal after this turn we know we are in the North segment as it would be impossible to receive an "N" after a 90 degree right turn had we been flying in the East quadrant at the beginning of our problem. The signal received after the 90 degree right turn determines our position beyond all doubt.

Now, having orientated ourselves the next thing to do is to get back on the beam as smoothly as possible and headed in the direction of the beacon. Continuing with the above problem: Having turned 90 degrees to the right from a North course we now should be flying due East. Now make a 1½ minute (270 degree) turn to the left—away from the beacon. Our course is now South and there is sufficient straight-away after the turn to correct the course until the **on course** signal of the beam is again heard when an additional 40 degrees is turned to the left onto and parallel with the beam.

In each case where the chart shows a plus 40 or 50 degree turn after the 180 or 270 degree turn, this is the turn necessary to put us on and parallel with the beam. There is always a straight-away course after each 180 or 270 degree turn permitting any errors in the turn itself to be rectified before turning down the beam. Of course in actual practice it is not absolutely essential that the various angles on the chart be remembered or adhered to for the purpose of getting back on the beam after orientation has been completed. But for smoothness and accuracy of execution and for the purpose of our test we will adhere strictly to the figures as shown on the chart.

Every pilot should work out problems from each quadrant, check over the angles given on the chart and become as familiar as possible with the system before going into the air. By so doing our practical work will be greatly simplified.

We will take up other systems of orientation in our training but for the present all our time will be devoted to the attached "90 degree" method.

ACCIDENT REPORT ON SCHEDULED AIR TRANSPORT OPERATIONS FOR THE FIRST SIX MONTHS OF 1932

American-operated air transport services flew 24,668,414 miles in the first six months of 1932 with 67 accidents, or 368,185 miles per accident, it was announced by Col. Clarence M. Young, Assistant Secretary of Commerce for Aeronautics. Only six of these accidents involved passenger fatalities while a total of eleven accidents resulted in pilot or passenger fatalities.

The semi-annual report on civil aircraft accidents in scheduled air transport services for the period January to June, 1932, showed that the causes of the 67 accidents were divided as follows: Personnel errors, 10.96 per cent; power plant failures, 22.39 per cent; airplane failures, 19.26 per cent; miscellaneous (this classification including weather, darkness, and airport and terrain), 47.39 per cent. There were no aircraft accidents concerning which the cause was undetermined or doubtful.

In a study of the injuries and fatalities occurring in scheduled air line accidents during the first half of 1932, it was found that 10 persons suffered minor injuries and 27, including 16 passengers, 10 pilots and 1 co-pilot, lost their lives. In all, there were 199 persons involved in scheduled air transport accidents, of whom 162 received no injuries whatever. A total of 248,954 passengers were carried during the period.

The accident report is based on the findings of the accident board of the Aeronautics Branch, which is composed of two pilots, a flight surgeon, an aeronautical engineer, a lawyer versed in air law and a statistician. This board investigates and determines the causes of all civil aircraft accidents, by analyzing all accidents reported from the field and reducing them to their causation factors expressed in percentages.

A tabulation showing miles flown per accident and fatality, and passenger miles flown per passenger fatality in the first six months of 1932 with comparative statistics for the similar periods of 1930 and 1931, follows:

Miles Flown Per Accident in Scheduled Air Transport Services During the Periods January-June, 1930, 1931, and 1932.

	January-June, 1930	January-June, 1931	January-June, 1932
Miles flown	16,902,728	20,190,925	24,668,414
Total number of accidents	44	61	67
Miles flown per accident	384,152	330,999	368,185
Total number of fatal accidents	6	5	11
Miles flown per fatal accident	2,817,121	4,038,185	2,242,583
Total number of pilot fatalities	5	5	10
Miles flown per pilot fatality	3,380,545	4,038,185	2,466,841
Total number of passenger fatalities	22	9	16
Passenger miles flown	52,264,616	47,501,901	63,529,538
Passenger miles flown per passenger fatality	2,375,664	5,277,989	3,970,596
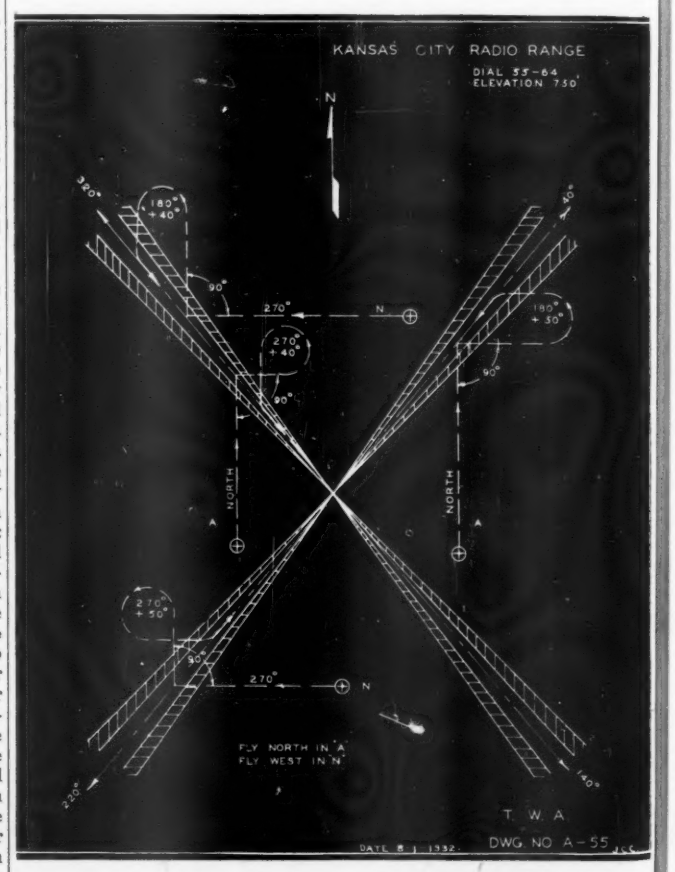
DIAGRAM OF SNEAD'S FORMULA ON K. C. BEACON